INFLUENCE OF FARMING SYSTEMS AND SOIL TILLAGE OF WHEAT MAIN PESTS

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Abstract. The intensification of agriculture has a number of negative consequences, and the conservation of land resources during their active exploitation is an important problem nowadays, paying attention to the ever-growing food increase necessity.

The world organic farming practice shows that we are very limited in the agricultural crops pests regulation. Artificial natural enemies increasing and the landscape altering to enhance biological control are not popular solutions and have contradictory efficiency.

Given the trend towards minimizing the main processing and reducing the use of pesticides, it becomes necessary to search for new, balanced approaches to solving the problem of protecting winter wheat from pests and increasing its productivity.

The research was carried during 2019-2021 in the stationary field of OP NULES of Ukraine "Agronomic Experimental Station". The species composition and number of pests of winter wheat of the Linus variety were determined according to generally accepted entomological methods in accordance with the species affiliation.

Scheme of two-factor experience: factor A - three farming systems: industrial, ecological and biological. Factor B - options for basic soil cultivation: plowing by 20-22 cm (control), non-shelf tillage (chiseling by 20-22 cm), shallow tillage by 10-12 cm (soil disking), surface tillage by 6-8 cm (soil disking).

Application of insecticide "Pyrenex Super" (chlorpyrifos, 400 g/l + bifenthrin, 20 g/l) was carried out in phase BBCH 31 (stage of the first node) and BBCH 53 (30% inflorescence appearance) in the norm - 1 l/ha in the industrial system of agriculture, edge spraying with the drug of ecological plots - 0.8 l/ha. The biological system of agriculture did not involve the introduction of chemical protection products.

Entomocomplexes of winter wheat are constantly in a dynamic state depending on the average annual temperature indicators, precipitation, farming systems, crop

rotation, etc. The analysis of the SCC in terms of adequacy (Ki) showed that the years of research differed significantly in terms of monthly values.

According to the research results, the main pests of winter wheat in the spring-summer period were identified - these are *Schizaphis graminum R., Eurygaster integriceps R., Oulema melanopus L., Anisoplia austriaca H.* and *Haplothrips tritici Kurd.*

Analysis of the species composition of pests shows that in percentage the main number of phytophages belonged to the series *Homoptera* and *Thysanoptera* - 53.01% and 31.4%, respectively. Less numerous were the representatives of the series *Coleoptera* - 8.51%, including 53.47% of the number of species of *Oulema melanopus L.*, the rest - *Anisoplia austriaca*. The lowest number during the years of observation was the harmful shell of the *Hemiptera* series - 6.05%. Phytophages such as *Cephus pygmeus* and *Zabrus tenebrioides* were present in winter wheat crops and did not pose a threat to the crop.

A statistical analysis of the data obtained showed that the number of all pests was significantly influenced by farming systems (factor A). The industrial model turned out to be the best farming system in terms of influence on the indicator of the number of pest populations. The biological system showed an inability to effectively control the population of winter wheat by phytophages. According to our observations, populations of natural enemies without increasing the availability of flowering plants, landscape diversity or the use of cover crops are not capable of efficient regulation of insect pests, which confirms the data of other researchers.

There was a significant effect of basic tillage options on limiting the number of beetles and thrips, while the number of aphids, bedbugs and leeches in all tillage options was within random variations. On average over the years of the study, the number of beetles increased significantly in the variant of disking by 6–8 cm, while the variants of chiseling and disking by 10–12 cm limited its number to 1.1 specimens /m^2 at the control level a slight deviation in the direction of increase.

The numerical advantage of aphids and bedbugs in surface treatment by 6-8 cm without a statistically significant difference, we explain the increase in the mass of

weeds in this variant, which serve as a reservoir of disease and additional habitat of pests.

Analysis of data on the influence of factor B on the size of the population of wheat thrips showed that reducing the depth of tillage in the options of fine and surface tillage significantly increases the average number of pests to 12.4 and 14.4 specimens / m2 (NIR_{05} = 3.2). The use of chisel treatment showed no statistically significant difference compared to plowing (control), and provided control of the number of phytophagous at the level of 7.1 specimens / m^2.

According to our research, the main tillage has a significant effect on the number of thrips and bread beetles, the females of which lay eggs to the depth of the arable layer, and the larvae of the beetle beetle are able to penetrate into the soil to a depth of 80 cm. 12-14 cm showed the result at the control level, and a decrease in the processing depth to 6-8 cm significantly increased the abundance of Anisoplia austriaca N. to 2.0 ind./m^2. The distribution of thrips in the zone of the Right-Bank Forest-Steppe of Ukraine was significantly influenced only by the option of chiseling with an average number of pests of 7.1 ind./m^2. Conducting modern agriculture consists in controlling the number of pests at a level that does not lead to a significant decrease in the yield of winter wheat, and not to a level close to zero. It is due to the decrease in the rate of application of the insecticide and only the edge treatment of the plots that it acts as the optimal option in terms of the number of all pests below the ERS levels.

Therefore, the reported data show the effectiveness of reducing the multiplicity of insecticide treatments of winter wheat in the ecological system without increasing the risk of crop loss due to damage to plants by pests in combination with chisel tillage.